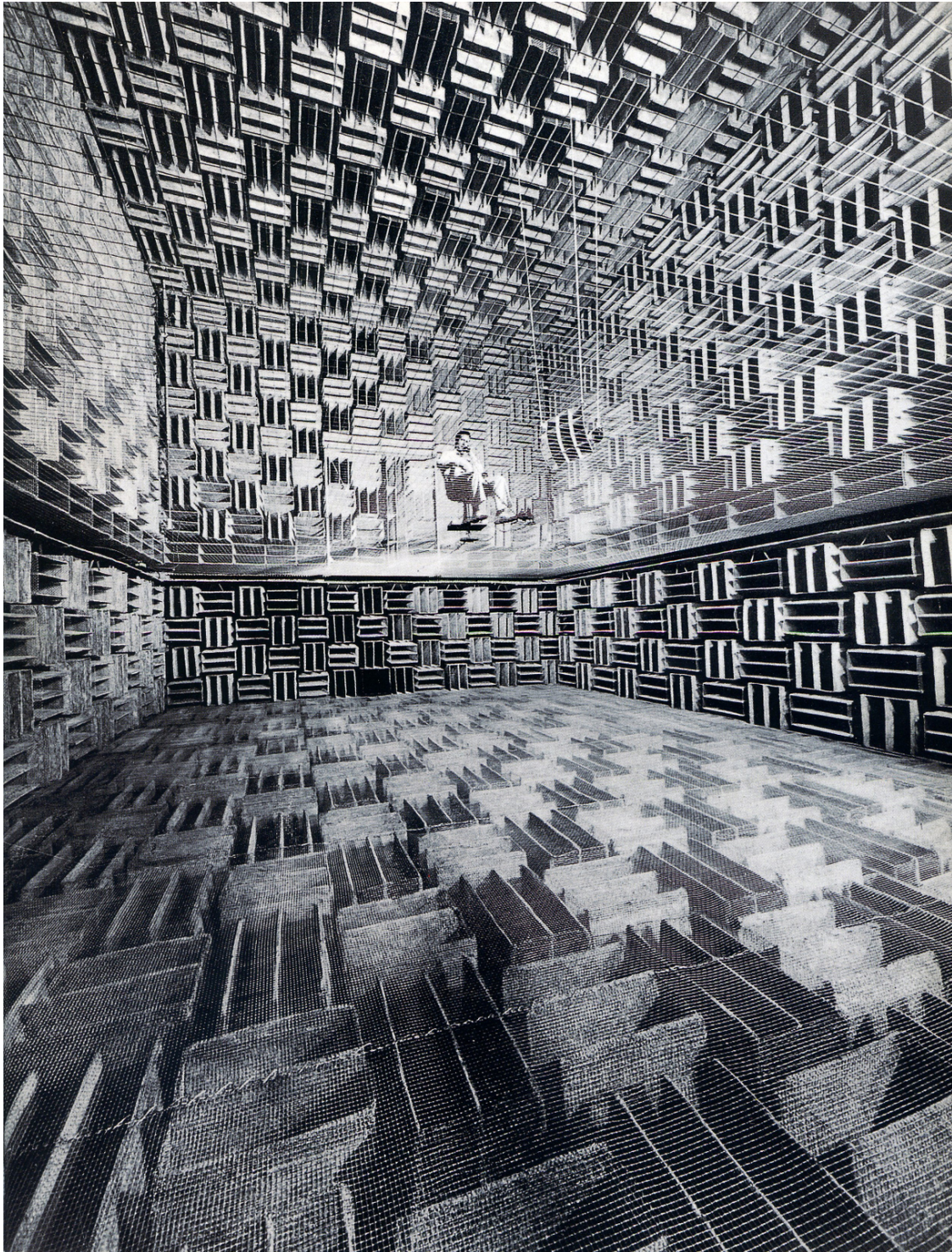


MUS 407-507 FALL/SPRING SEMESTER 2022/2023



UVic's most recent health and safety protocol can be found here:
COVID information 2022 and here: [Health & Safety](#)

Please do a **daily health self-assessment** before coming to campus. If you're sick or have **symptoms of COVID-19**:

- stay home and let your instructor or supervisor know about your absence
- students: learn what to do if you have to miss class
- use the COVID-19 self-assessment tool to see if you should get tested
- call 811 if you need medical advice
- follow the BCCDC guidance for how to self-monitor and self-isolate

Even if you do not have COVID-19, you should stay home if you feel sick. This will help stop the spread of other illnesses, especially during cold and flu season.

Student Wellness resources - List of community, local and private resources, relating to mental health and wellness.

Counselling Services - Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students. A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

Health Services - University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives. We encourage students to use UHS as their primary point of health care while at UVic. We are located at the Petersen Health Centre.

Centre for Accessible Learning - The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Dr. Andrew Schloss

Office: MacLaurin A177

Local: 721-7931

Office hours: Tues 4:30-5:30 pm or by appointment (email to confirm)

email: aschloss at uvic dot ca

Classes: Control Room and/or Recording Studio / Thursday 7-9:30 pm

SIGNUP FOR STUDIO TIME HERE:

<https://www.uvic.ca/finearts/music/resources/book-room/index.php>

FILES FOR THIS CLASS ARE FOUND HERE:

smb://sim.storage.uvic.ca/sim

(On a Mac type **cmd<k>** in the Finder and type this address and your login credentials. On a PC it is slightly different)

ZOOM LINK FOR THIS CLASS (if/when held online):

<https://uvic.zoom.us/j/88046147168?pwd=cUVLS2dUZ21VZ0tjRVVVTNWExMld6UT09>

ABOUT THIS CLASS:

In this seminar we explore various aspects of algorithmic and interactive music generation, performance, and time-based art (not just music). This is a project-based seminar in which we will discuss work by class members and also notable historical works. Please note that group discussions are an integral part of the class.

The projects/etudes are intended not only to help learn about programming, but also as possible points of departure for other creative endeavors. The “midterm” is a live radio show on **CFUV** in which we play and discuss on-air pieces that involve processing of existing material; a sort of *musique concrète* in which the source material is one piece of music. The “final” is a public concert in the PT Young Recital hall in April, in which you will perform (or you will have someone else perform) a piece that is centered on live interaction.

COVID-note: We will have a live concert in the PTY Recital Hall on FRIDAY, APRIL 14th unless the pandemic renders public events impossible.

Your grade for the year will depend on several factors: active participation in the seminar (which obviously includes attendance), creative and effective attempts at

solutions to all the assigned problems/etudes, originality and overall success with your Plunderphonic, and also your work in the final concert in April.

You can put your work in the MUS 407/507 dropbox as you do it. **Please include a brief writeup for each project** (including the concert performance), saying what you did, what worked, what didn't, strategy, etc.

Attendance/participation in seminar	15%
Projects/etudes (ongoing)	35%
CFUV Plunderphonic "midterm"	20%
Spring concert/performance "final"	30%

[Policy on Academic Integrity](#)

[Undergraduate Grading Scale](#)

READINGS:

Miller Puckette: *The Theory and Techniques of Electronic Music*

David Zicarelli: *Communicating With Meaningless Numbers*

Leland Smith: *Henry Cowell's Rhythmicana*

Henry Cowell: *Rhythmicana* score

John Oswald: *Plunderphonic* liner notes

Norman Irgma: *Interview with John Oswald*

Steve Reich: *Clapping Music* score

Steve Reich: *Piano Phase* score and mp3 file on server: Class Files: 407/507

Terry Riley: *In C* score and parts

Boie: *Gesture Sensing via Capacitive Moments (AT&T document)*

Mathews: *Radio Baton Instruction Manual*

Randy Jones: MSP/Jitter overview

[Go through the MSP tutorial (not just the Max tutorial). And/or the Kadenze tutorial. Ongoing]

FALL SEMESTER (subject to minor changes)

1. Clapping Music (and/or Piano Phase):

A first attempt by Sept 22. Final version (with modifications) by October 6:

- i. You can stop/continue or stop/go back to the beginning
- ii. You can play each phrase any number of times (good for testing)

- iii. You can start at the beginning of any phrase without having to “skip ahead” (crucial for rehearsing). Finish with these improvements by Sept 29.
- iv. Be able to play along with your patch! This might take some practice. But anyway, how do you know it works if you can’t monitor its performance?
- v. Add some code to create an “amateur/drunk” dial. That is, a way to make the rhythm imprecise on purpose. You should be able to turn it to zero to get the exact rhythm, then turn it up to get random error, so that the attacks are both before and after the correct time. Then turn the dial from zero and see how much error is needed to make it noticeable (the *jnd* for “jitter,” and how much error renders it objectionable.

Another challenge – try to make it so your patch opens ready to play (using loadbang and/or preset objects) AND when you “reset” or open the patch, no sound is made.

NOTE: If you do Piano Phase, note that the patch needs some intelligence. It’s not sufficient to just play two soundfiles at slightly different speeds (as you could do in a sound editor instantly). Why not? Because the software has to “know” when the two parts have moved by one note, and then stay together for a while before advancing. So it turns out that you do need Max/MSP (or something like it) to do this. Live performance of Piano Phase: <https://www.youtube.com/watch?v=AnC5DhNqZ6w>

2. Harmonics Generator:

Write a patch that plays random harmonics (up to the 16th) of a given fundamental (that you play from a MIDI keyboard). Note that the harmonics can be with MIDI, and/or they can be via synthesis. The MIDI harmonics should be “corrected” with pitch bend to match the theoretical frequencies of the harmonics.

You can change the speed of the harmonics with the mod wheel. Velocity of the harmonics is given by velocity of the last note played.

Compare frequencies generated via MIDI with those generated properly using DSP. You can test the MIDI pitch-bend by playing it simultaneously with the synthesized version. When they are getting close, the beats will get very slow and they will vanish when you are perfect.

Note that to hear the beats, you’ll want to play a sound in MIDI that doesn’t decay so fast so you can hear the beats (an organ timbre might be good -- use pgmout to change the MIDI instrument). Also, to make it easier to hear the beats, slow it WAY down!

The MIDI version is intrinsically **polyphonic**. It’s optional to make the DSP version polyphonic. It’s up to you how you play/control your harmonics from the keyboard.

To get the real frequencies with MIDI, you have to use pitch-bend (**bendout**)

A better (more precise) option is “double-precision” pitch-bend, which is (**xbendout**).

[Remember that pitch bend is a channel-wide command, meaning that it applies to all notes on a given MIDI channel. So to get individual amounts of pitch bend on different harmonics, you'll need to keep them on different MIDI channels.]

This was fixed in MIDI 2.0 after 37 years!

<https://qz.com/1788828/how-will-midi-2-0-change-music/>

Option: Make it playable from the Soundplane in addition or instead of the keyboard.

Done by Oct 6.

3. Rhythmicon:

Have something going by October 20.

Finish by November 3. This needs to be performable on a keyboard or the soundplane. ADD:

Being able to start anywhere.

<http://120years.net/the-rhythmiconhenry-cowell-leon-termenusa1930/>

[Rhythmicon performance](#)

4. Plunderphonic:

Have your potential source material by October 27. We will listen to it and discuss...

Have a version to play in class by November 24th.

Finish Plunderphonic (v .9 -- with some room for edits) by the last class of Fall term.

**RADIO SHOW ON CFUV WILL BE IN THE RADIO STATION STUDIO ON CAMPUS
ON FEB 2, 2023**

SPRING SEMESTER (subject to minor changes)

5. Parrot patch: Make an MSP patch that duplicates the functionality in “Trimpinbird.MOV,” but adds some kind of twist to the “parrot” idea. DUE by Feb 9.

Extra credit: Make a Max patch that someone could use to see if they are talking in their sleep; it should record the audio only when it's above some threshold, and also time-stamp it. Should only record when there is something audible happening. Optional: add a “pre-roll” function, so that it never cuts off the beginning of a phrase.

6. MUGIC patch: Make a Max/MSP/jitter patch (jitter is entirely optional if you want to get into graphics) that uses the MUGIC as a multidimensional controller. Show us how you can perform with it in realtime. DUE by March 16.

7. Karplus-Strong etude: Make a short musical example “etude” using the **Karplus-Strong plucked string patch**. Try to see what you can make it do; what is the maximum variety of sounds it can produce? Start with the Karplus-Strong patch in the MUS 407/507 folder on the

Fine Arts server. Of course, you can add multiple copies of it (or use poly~) to get more complex textures. DUE by April 6.

Final Concert on APRIL 14, 2023

→ **Have something ready to try in the PTY Recital Hall by MARCH 3rd!**

That is to say: be ready to make some sound! This is your opportunity to try out the space, also quad sound dispersion in the hall.

-DRESS REHEARSALS in the PT Young Recital Hall on March 3rd and March 24th pending permission for social distancing in the hall. We might have to do this in two installments.

8. April 14^h 2023: THE CONCERT! -- OR VIDEO OF PERFORMANCE DUE APRIL 18TH

NOTE: Please submit a brief **concert report** within a week of the concert. This should be a brief document (one or two pages) that describes your concert piece: the musical and technical essence of it, and also a short critique of your performance – did it go well? What worked and what didn't? What would you change if you ever did it again?

RESOURCES (not an exhaustive list)

MUGIC controller (Mari Kimura)

LEAP controller

SDRdrum (radiodrum)

Soundplane

Notomoton

Arduinos

Buchla synth

Moog Piano Bar

12-step foot controller

anemometers

Yamaha MIDI guitar unit (pitch-to-MIDI)

Korg WaveDrum

vibraphone robot (in disarray B002 currently)

Trimpin xylophones and glockenspiel

Spectrum Piano apparatus (in recording studio)

etc

WEEK BY WEEK SUMMARY (approximate)

1. Intro to the class and each other, listening session
2. Overview of Max/MSP jitter, intro to Clapping Music
3. Listening session, first look at Clapping Music attempts
4. John Oswald's **Plunderphonics**
5. Deadline for Clapping Music, listen to everyone's patches
6. Introduction to Henry Cowell, the "thought experiment" of the Rhythmicon realized by Leon Theremin
7. What *are* harmonics, anyway? Fourier, the DFT and convolution theorem, the simplest digital filter
8. Examples of performers: Mari Kimura, George Lewis, David Wessel, etc, The Seven Wonders of the Ancient World
9. Public art examples and relationship with music: Ballard Library, Seattle City Hall, etc
10. Listen to harmonic generators, discuss harmonic series etc, The Space Between Us
11. The Arduino
12. Listen to Plunderphonics first drafts
13. Listen to Rhythmicon performances
14. NIME examples
15. Arduino projects
16. The marimba robot on vibraphone
17. The marimba robot on various idiophones
18. The radiodrum and the LEAP processor
19. Recursion, The Towers of Hanoi, Interesting example of sonification of algorithms:
<http://www.youtube.com/watch?v=kPRA0W1kECg>
20. Trimpin's sculptures
21. Conlon Nancarrow's music and philosophy
22. Discussion of April concert and strategies
23. Karplus-Strong algorithm, Silicon Valley Breakdown
24. Dress rehearsal in PT Young Auditorium
25. Assess progress on concert pieces
26. FINAL CONCERT

MEDIA:

Matt Wright's KADENZE course on Max/MSP (author of OSC):

<https://www.kadenze.com/courses/programming-max-structuring-interactive-software-for-digital-arts-i/info>

The Sound of Invention: Trimpin documentary DVD

[The Sound of Invention](#)

[Electro-Pythagoras](#): documentary about Martin Bartlett

[Imagen Heap -- glove system](#)

15 Corners of the World (documentary about Eugeniusz Rudnik, Polish electroacoustic pioneer)
<https://mubi.com/showing/15-corners-of-the-world>

[David Wessel, CNMAT University of California, Berkeley:](#)

"Designing musical instruments that privilege improvisation" (part of the **CIRMMT** Distinguished Lectures in the Science and Technology of Music, McGill University). ([Full screen version](#))

NIME DVD (recorded at NIME 2005, UBC)

Mari Kimura's "augmented violin": <http://www.marikimura.com/videos.html>
[MUGIC glove interface](#)

Miller Puckette and Kerry Hagan using two LEAP controllers at NIME 2018, Virginia Tech:
["Who Was That Timbre I Saw You With?"](#)

The Space Between Us, performed at the Other Minds Festival, SF (vimeo):
<https://vimeo.com/206532082>

8:66 for Trimpin at Open Space (vimeo)

Fonda Mix (vimeo)

Paul Dolden: **L'Ivresse De La Vitesse** (audio only)

[David Zicarelli Keynote: Developing Max/MSP with JUCE](#)

Silent Way is a suite of plug-ins designed for use with analogue synthesisers, and especially as part of a modular analogue synthesiser system. The plug-ins produce no sound themselves, nor do they process sound - rather, they generate signals to be used as control voltages (CVs), which can be patched into the control inputs of oscillators, filters, VCAs etc. of an analogue system. Also, with the addition of the CV Input plug-in, it is possible to bring CVs from the synth into the computer, for recording or processing. <http://www.expert-sleepers.co.uk/silentway.html>

Randy Jones: [Demo of soundplane](#)

Documentary about Roland: [Land of the Rising Sound](#)

[David Zicarelli introduces the MC class of objects](#)

[Sean Costello \(Valhalla DSP\) talks about designing reverbs](#)

[Seans's ORION lectures at UVic in 2020](#) and <https://vimeo.com/396654466>

Forbidden Planet – First electronic music score (also blurs distinction between sound design and composing)

Other ideas

A MIDI processor that transforms music either live or from a file.

Example: mirror image of played notes. What exactly would this patch do?

A DSP processor that transforms the signal.

Example: mirror image of frequencies, similar to the MIDI version, but for all frequencies in an actual signal . How to do that?

TENTATIVE GUESTS:

Taylor Brook

Iain Duncan

Duncan McConnel

Ted Moore

Randy Jones

Mari Kimura

David A. Jaffe

Kathryn Vaughn

NEW LINKS 2022

[Introduction to MIDI 2.0 \(4:38\)](#)

[Marco Parisi Demos the GeoTenorSax](#)

[AUDIOBUS](#)

[MUGIC](#) (rehearsal)